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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/675,991	09/29/2000	Randy B. Osborne	042390.P8456	1740

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EXAMINER

KING, JUSTIN

ART UNIT	PAPER NUMBER
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2111

DATE MAILED: 01/15/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Page

Office Action Summary

Application No.

09/675,991

Applicant(s)

OSBORNE, RANDY B.

Examiner

Justin I. King

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 11. 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 24-26, 30, and 41-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of the Thompson (U.S. Patent No. 5,392,404), LaViolette et al. (U.S. Patent No. 4,602,327), and the Applicant's admitted prior art.

Referring to claims 24, 30, and 43: Thompson discloses transferring read data from a first agent, issuing a preempt signal from a second agent (abstract, figure 1). Thompson discloses that preemption is decided based on the predetermined priority (column 4, lines 40-49); thus, Thompson determines whether to allow preemption of the current bus control based at least in part on the pending request.

Thompson discloses relinquishing bus control either immediately or according to a predetermined timed sequence (column 2, lines 66-69); thus, Thompson discloses determining a

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suitable preemption point. And when Thompson preempts the currently executing task, it temporarily halts the task.

Thompson does not explicitly disclose transferring a read data request from the second agent to the first agent, but Thompson discloses transactions among a plurality of agents (abstract); thus, the transferring a read data request from the second agent to the first agent is anticipated within the scope of Thompson's disclosure. Thompson also does not explicitly disclose returning the control back to the processing been preempted, an "Official Notice" is taken that it is well known within the scope of a person with ordinary skill in computer art to resume the previous process. Furthermore, LaViolette supports this Official Notice and discloses it is known to process tasks in the order of their associated priorities and the preempted task will be resumed accordingly to its ranked priority (abstract).

Neither Thompson nor LaViolette explicitly discloses a half-duplex bus, but as the specification states, the half-duplex bus is a well-known practice.

Hence, it would have been obvious to one having ordinary skill in the computer art at the time Applicant made the invention to adapt the LaViolette's teaching and the half-duplex bus design to Thompson because LaViolette teaches one to prioritize tasks for the optimum efficiency and the half-duplex bus is a well-known industrial practice for lowering system cost.

Referring to claim 25, 41, and 44: The argument above applies; furthermore, Thompson discloses a memory controller (figure 1, structure 22).

Referring to claim 26, 42, and 45: Claim 25's argument applies; furthermore, Thompson discloses I/O devices (figure 1, structures 24).

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4. Claims 27-28, 31-40, 46-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Thompson in view of LaViolette, the Applicant's admitted prior art, and in further view of Metz, Jr. et al. (U.S. Patent No. 5,448,701).

Referring to claim 27 and 46: Neither Thompson nor LaViolette discloses a threshold in considering preemption. Metz discloses a threshold in considering priority and preemption (abstract). Hence, it would have been obvious to one having ordinary skill in the computer art at the time Applicant made the invention to adapt the LaViolette and Metz's teaching and the half-duplex bus design to Thompson because LaViolette and Metz teach one to prioritize tasks and threshold value for the optimum efficiency and the half-duplex bus is a well-known industrial practice for lowering system cost.

Referring to claims 28, 33, 40, and 47: Metz's buffer threshold is equivalent to the cache line boundary.

Referring to claim 31: Since Thompson's control logic will compare both pending request and current process, Thompson discloses sampling the first and second signals.

Referring to claim 32: Metz discloses the read starvation (abstract).

Referring to claims 34-35: Although none of prior arts discloses one clock period as claimed, such limitation are merely a matter of design choice and would have been obvious. The prior art teaches preemption with priority consideration. The limitation of one clock period does not define a patentably distinct invention over that in prior arts since both the invention as a whole and combined prior arts are directed to preemption with proper priority consideration. The number of clock period is inconsequential for the invention as a whole and presents no new or unexpected results, so long as the preemption is successfully carried out. Therefore, to have

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one clock period as claimed would have been a matter of obvious design choice to one of ordinary skill in the computer art.

Referring to claims 36-37: Thompson's memory controller includes an arbiter executing an arbitration protocol (column 2, lines 35-36).

Referring to claim 38-39: Claim 24's argument applies; furthermore, Thompson discloses the arbitration line (column 2, last paragraph) and DMA request line (column 4, line 55), which are the preempt line and request line respectively.

5. Claims 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Thompson in view of LaViolette, Metz, and in further view of Leger et al. (U.S. Patent No. 5,771,356), and the Applicant's admitted prior art.

Referring to claim 29: Leger discloses both threshold and a casual control for I/O preemption (abstract). Leger's casual control allows transferring of a limited of transaction before handing over the control accordingly to the priority. Hence, it would have been obvious to one having ordinary skill in the computer art to adapt Leger's teaching to Thompson and Metz because Leger teaches one to select a proper cut-off point on the current process for data integrity before handing over the control.

Response to Arguments

6. In response to Applicant's argument that the previous Office Action discusses that the "Thompson discloses transferring control; the read data is within the scope of Thompson's control. Thus, the halting of the transfer of read data is anticipated by Thompson": The previous

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Office Action does not conclude the data transferring halting as argued by the Applicant.

Thompson explicitly discloses the halting the data transfer on column 4, lines 66-68. Since the system will resume the unfinished/preempted tasks, the halting is only temporally. The Office Action states that the resuming the unfinished/preempted tasks is well known within the scope of the computer art, and nowhere in Applicant's response disagree that this resuming practice is not novel. Furthermore, LaViolette explicitly discloses this resuming practice.

7. In response to Applicant's argument on Thompson does not discloses the preemption determination based in part on pending request (Remark, page 8, paragraphs 2 and 3): Thompson does disclose this. Thompson discloses the preemption logic is incorporated in each I/O device (column 2, line 42); thus, each pending request has the priority value and the preemption determination is based in part on the pending request. Since the preempted task will be resumed, therefore the task is only temporarily preempted. Since the preemption logic is incorporated in each device, including the first agent, therefore the determination is based in part on the pending request for the first agent.

8. In response to Applicant's argument that the claim 24's determination is not predetermined (Remark, page 9, paragraph 1): The prior art's preemption is not predetermined as Applicant argues. It is the priority that is predetermined.

9. In response to Applicant's statement that "the state of pending read request" (Remark. Page 9, paragraph 1's last line): It is unclear what Applicant meant by the state of pending read request. The state of the pending request is "pending".

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10. In response to Applicant's argument that it is unclear how Metz resumes a previously preempted task as a well-known practice (Remark, page 9, last paragraph): As the Rejection stated above, LaViolette discloses that it is known to resume a preempted task.

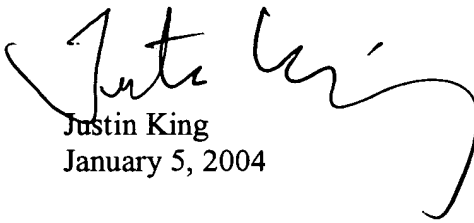
11. In response to Applicant's argument that Leger does not disclose the temporary preemption (Remark, page 10): The Office Action did not use Leger to reject temporary preemption element.


Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin I. King whose telephone number is 703-305-4571. The examiner can normally be reached on Monday through Friday, 9:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached on 703-308-3110. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-5631.


Justin King
January 5, 2004


XUAN M. THAI
PRIMARY EXAMINER
TCU100